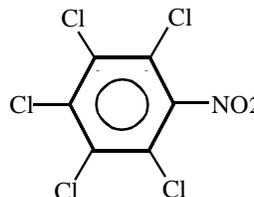


PENTACHLORONITROBENZENE

Pentachloronitrobenzene is a federal hazardous air pollutant and was identified as a toxic air contaminant in April 1993 under AB 2728.

CAS Registry Number: 82-68-8

Molecular Formula: $C_6Cl_5NO_2$



Pentachloronitrobenzene is composed of cream or colorless crystals. It is non-corrosive and has a musty odor. Pentachloronitrobenzene is practically insoluble in water, slightly soluble in alcohols, and somewhat soluble in carbon disulfide, benzene, and chloroform (Sax, 1987).

Physical Properties of Pentachloronitrobenzene

Synonyms: PCNB, Quintozene

Molecular Weight:	295.36
Boiling Point:	328 °C (with some decomposition)
Melting Point:	142 - 146 °C
Vapor Pressure:	2.38×10^{-3} mm Hg at 25 °C
Density/Specific Gravity:	1.718 at 25/4 °C (water = 1)
Log Octanol/Water Partition Coefficient:	4.64
Henry's Law Constant:	0.0288 atm·m ³ /mole
Conversion Factor:	1 ppm = 12.1 mg/m ³

(Howard, 1990; HSDB, 1991; Sax, 1987; U.S. EPA, 1994a)

SOURCES AND EMISSIONS

A. Sources

Pentachloronitrobenzene is used as a chemical intermediate, and in slime prevention in industrial waters (U.S. EPA, 1994a).

Pentachloronitrobenzene (PCNB) is registered as a fungicide. It is used to prevent fungal diseases of ornamental grasses, lawns flowers, shrubs, and gardens. Agriculturally, PCNB is used as a seed protectant for cotton and grain seeds (DPR, 1996).

The licensing and regulation of pesticides for sale and use in California are the responsibility of the Department of Pesticide Regulation (DPR). Information presented in this fact sheet regarding the permitted pesticidal uses of pentachloronitrobenzene has been collected from pesticide labels

registered for use in California and from DPR's pesticide databases. This information reflects pesticide use and permitted uses in California as of October 15, 1996. For further information regarding the pesticidal uses of this compound, please contact the Pesticide Registration Branch of DPR (DPR, 1996).

The primary sources of pentachloronitrobenzene emissions in California reported in the United States Environmental Protection Agency's (U.S. EPA) 1995 Toxics Release Inventory (TRI) Public Data Release Report were the chemical and allied products industries (U.S. EPA, 1996b).

B. Emissions

In California, approximately 420 pounds of pentachloronitrobenzene emissions were reported in the U.S. EPA 1995 TRI Public Data Release Report (U.S. EPA, 1996b).

C. Natural Occurrence

No information about the natural occurrence of pentachloronitrobenzene was found in the readily-available literature.

AMBIENT CONCENTRATIONS

No Air Resources Board data exist for ambient measurements of pentachloronitrobenzene.

INDOOR SOURCES AND CONCENTRATIONS

No information on indoor sources and concentrations of pentachlorobenzene was found in the readily-available literature.

ATMOSPHERIC PERSISTENCE

Based on the vapor pressure, pentachloronitrobenzene is expected to exist in the atmosphere in the gas phase. The dominant atmospheric loss process for gaseous pentachloronitrobenzene is by reaction with the hydroxyl (OH) radical and photolysis. However, no information is available concerning the rates or tropospheric half-lives for these reactions. The estimated half-life and lifetime of pentachloronitrobenzene in the atmosphere due to the gas-phase reaction with the OH radical are several years. Photolysis and/or wet and dry deposition of gaseous and particle-associated pentachloronitrobenzene are therefore expected to dominate (Atkinson, 1995).

AB 2588 RISK ASSESSMENT INFORMATION

Pentachloronitrobenzene emissions are not reported from stationary sources in California under the AB 2588 program. It is also not listed in the California Air Pollution Control Officers

Association Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines as having health values (cancer or non-cancer) for use in risk assessments (CAPCOA, 1993).

HEALTH EFFECTS

Probable routes of human exposure to pentachloronitrobenzene are inhalation, ingestion, and dermal contact (HSDB, 1994).

Non-Cancer: Exposure to pentachloronitrobenzene may cause skin and eye irritation. Sensitization with erythema, itching, and edema have been reported in humans (HSDB, 1994). No information is available on the long-term health effects of pentachloronitrobenzene in humans. Liver damage, including increased liver weight and effects on liver enzymes was observed when dogs were exposed chronically to pentachloronitrobenzene (U.S. EPA, 1994a).

The U.S. EPA has established an oral Reference Dose (RfD) of 0.003 milligrams per kilogram per day for pentachloronitrobenzene based on liver toxicity in dogs. The U.S. EPA estimates that consumption of this dose or less, over a lifetime, would not result in the occurrence of chronic, non-cancer effects. The U.S. EPA has not established a Reference Concentration (RfC) for pentachloronitrobenzene.

Limited evidence is available for adverse reproductive effects on test animals. No information is available on humans (U.S. EPA, 1994a).

Cancer: No information is available regarding the carcinogenic effects of pentachloronitrobenzene in humans. Hepatomas were observed in mice exposed by gavage. In dermally exposed mice, skin tumors were reported, but the lack of adequate controls makes interpretation of these results difficult. The U.S. EPA has classified quintozene (pentachloronitrobenzene) in Group C: Possible human carcinogen, and currently has this classification under review (U.S. EPA, 1994a). The International Agency for Research on Cancer has classified quintozene (pentachloronitrobenzene) as Group 3: Not classifiable as a carcinogen (IARC, 1987a).

